## **CLAIMS**

1. A solid catalyst component for the polymerization of olefins comprising Mg, Ti, halogen and an electron donor selected from thiophene derivatives of formula (I)

$$R_2$$
 COOR  $R_3$   $R_1$   $(I)$ 

wherein R is a branched alkyl group,  $R_1$ ,  $R_2$  and  $R_3$ , same or different, are hydrogen, halogen,  $R^4$ ,  $OR^4$ ,  $COOR^4$ ,  $SR^4$ ,  $NR^4_2$  and  $PR^4_2$ , wherein  $R^4$  is a linear or branched  $C_1$ - $C_{20}$  alkyl,  $C_2$ - $C_{20}$  alkenyl,  $C_3$ - $C_{20}$  cycloalkyl,  $C_6$ - $C_{20}$  aryl,  $C_7$ - $C_{20}$  alkylaryl or  $C_7$ - $C_{20}$  arylalkyl group, optionally containing one or more heteroatoms, and two or more of said  $R_1$ - $R_3$  groups can also be joined to form a cycle, with the provisions that at least one of  $R_1$  and  $R_2$  is  $COOR^4$  and that when  $R_2$  is COO-i-octyl and R is i-octyl,  $R_1$  and/or  $R_3$  are different from hydrogen.

- 2. The catalyst component according to claim 1 in which in the thiophene derivatives of formula (I) R is a primary branched alkyl having from 4 to 15 carbon atoms.
- The catalyst component according to claim 1 in which in the thiophene derivatives of formula (I) R<sub>2</sub> is a COOR group.
- 4. The catalyst components according to claim 3 in which R<sub>1</sub> and/or R<sub>3</sub> is a C1-C20 alkyl group.
- 5. The catalyst component according to claim 1 in which in the thiophene derivatives of formula (I) R<sub>1</sub> is a COOR group.
- 6. The catalyst components according to claim 5 in which one of R<sub>2</sub> and R<sub>3</sub> of formula (I) are different from hydrogen.

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- 7. The catalyst component of claim 1 comprising a titanium compound having at least a Ti-halogen bond and the thiophene derivatives of formula (I) supported on a Mg halide in active form.
- 8. A catalyst for the polymerization of olefins comprising the product of the reaction between:
  - a solid catalyst component according to any of the claims 1-7;
  - an alkylaluminum compound and, optionally,
  - one or more electron-donor compounds (external donor).
- 9. The catalyst according to claim 8 in which the alkylaluminum compound (b) is a trialkyl aluminum compound.
- 10. Process for the (co)polymerization of olefins carried out in the presence of any of the catalysts of claims 8-9.